Bonneville Washington Shore Fishladder Proposed Entrance Modification for Lamprey at North Downstream Entrance (NDE)

Natalie Richards - Project Manager

Kristy Fortuny - Technical Lead

Mike Langeslay - Biologist

Sean Tackley - Biologist

Stephen Schlenker - Hydraulic Engineer

Portland District

FFDRWG Meeting - Jan 7, 2010

US Army Corps of Engineers

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Goals of Proposed Project

- Improve adult lamprey passage at Bonneville Washington Shore Fishladder (Bonn WA)
- Do not compromise salmon passage
- Provide lower velocity and flush, or rounded, surface corridor for lamprey passage at NDE

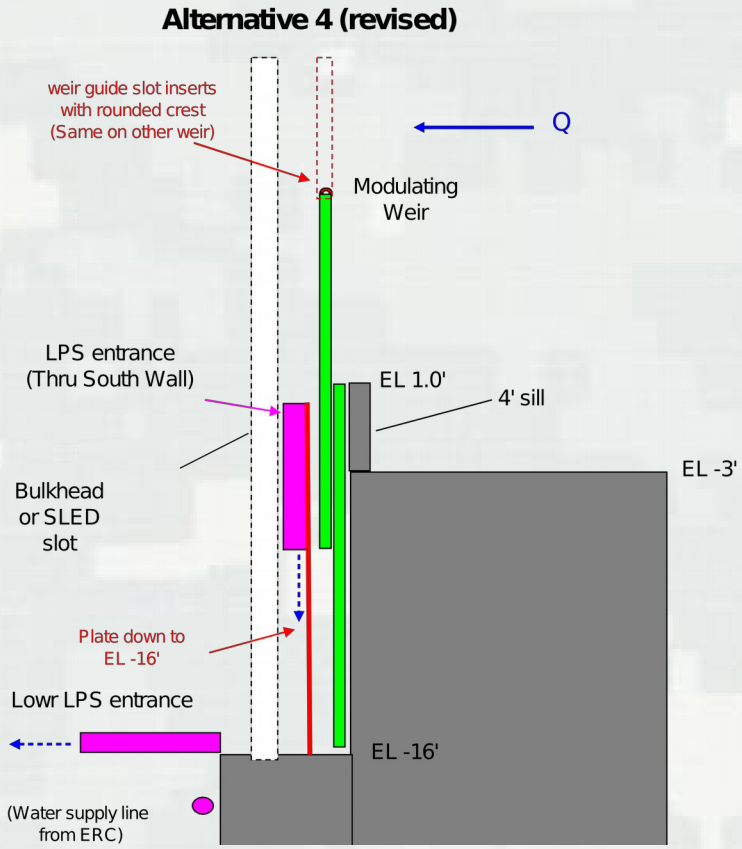
Design Update

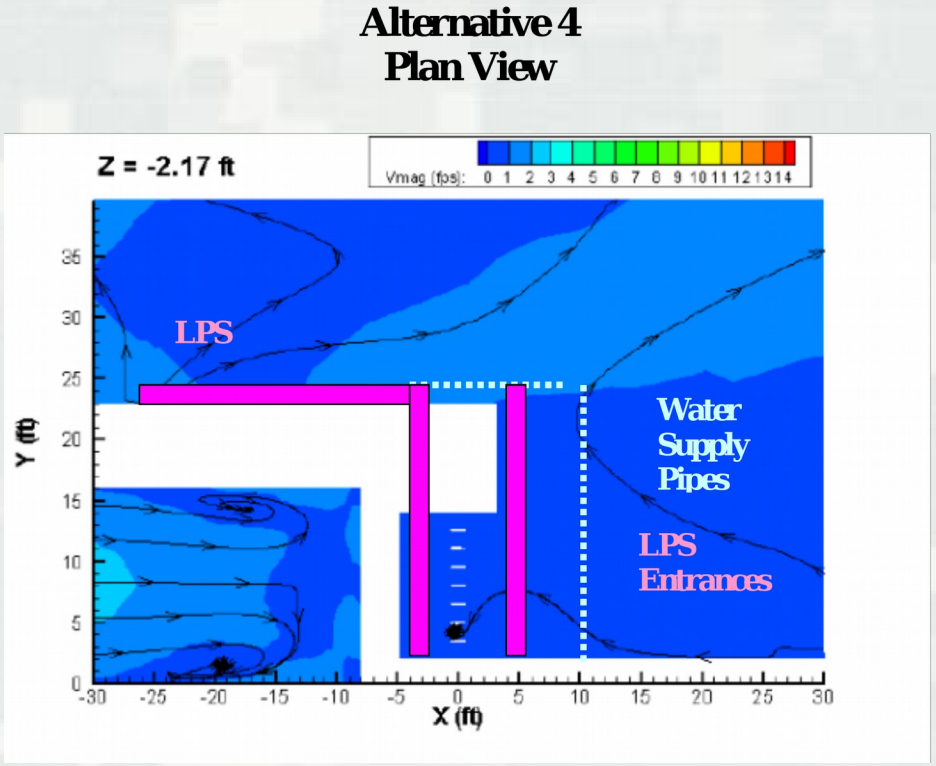
- 11/24/09 FFDRWG –
  - Presented Alternative 1 – Fixed Weir and Bollards
    - CFD Results - Weak surface jet and bollards do not sufficiently slow flow
    - Insufficient entrance head drop with existing water supply
  - Team tasked to investigate an alternate entrance weir and a separate lamprey entrance
- Alternate entrance weir –
  - 3 piece weir required - cumbersome operation
  - Poor approach for lamprey
  - May not provide desired hydraulic results
  - Insufficient entrance head drop with existing water supply
  - More investigation required to determine feasibility
- Team pursuing a separate lamprey entrance - “Alternative 4”
  - Construct during 2010-2011 In Water Work Period

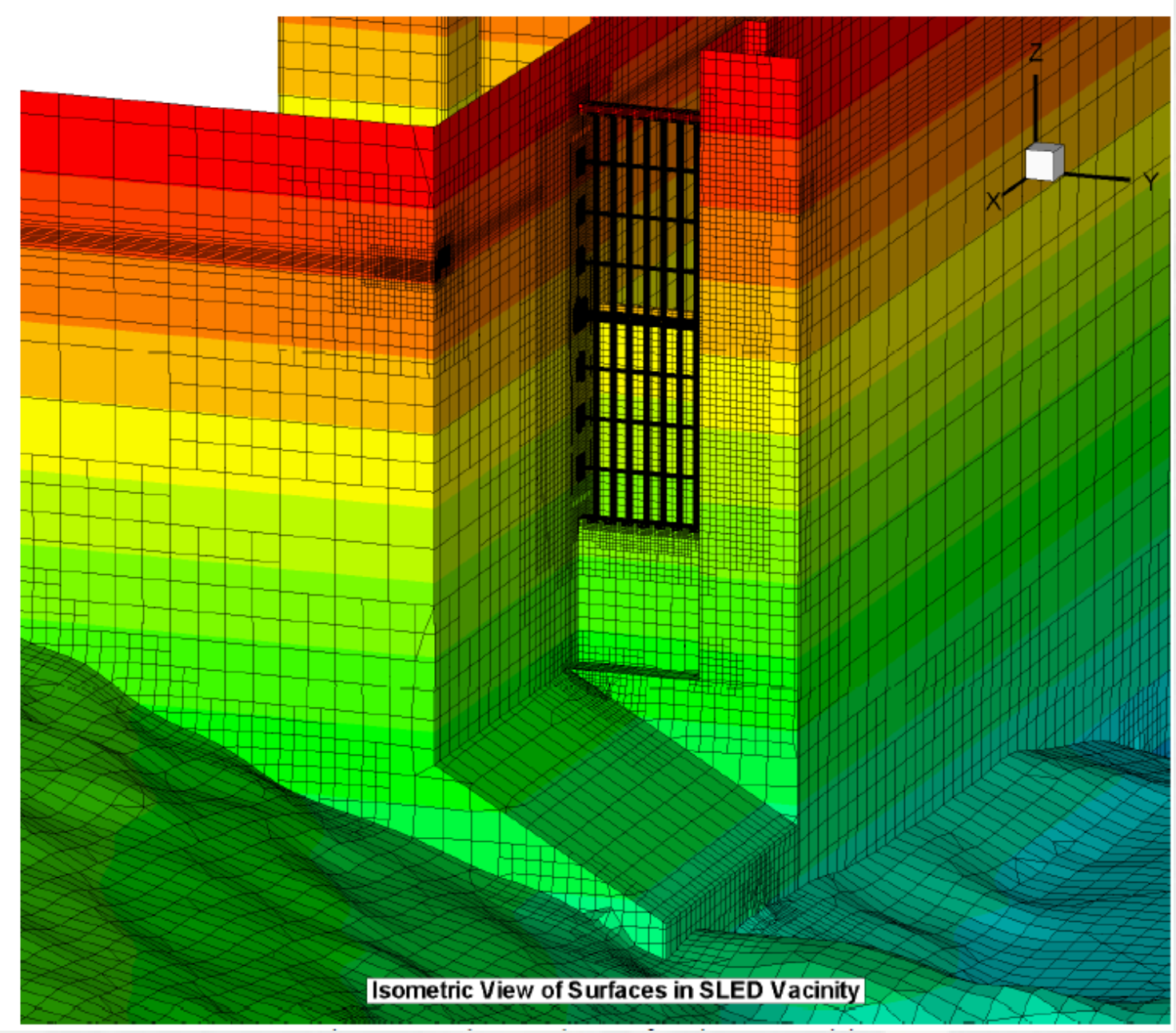
Alternative 4

- Separate Lamprey entrance and system
  - Piped flow feeds rectangular lamprey entrances that span entrance opening
  - Entrance velocity ≈ 2 ft/s
  - Entrances at two different levels
    - Elevation 0 ft
    - Elevation -16 ft
  - Upper entrance goes through south wall to trap & haul/LPS
  - Water supplied by ERC
    - Screened for juvenile fish and debris

Alternative 4

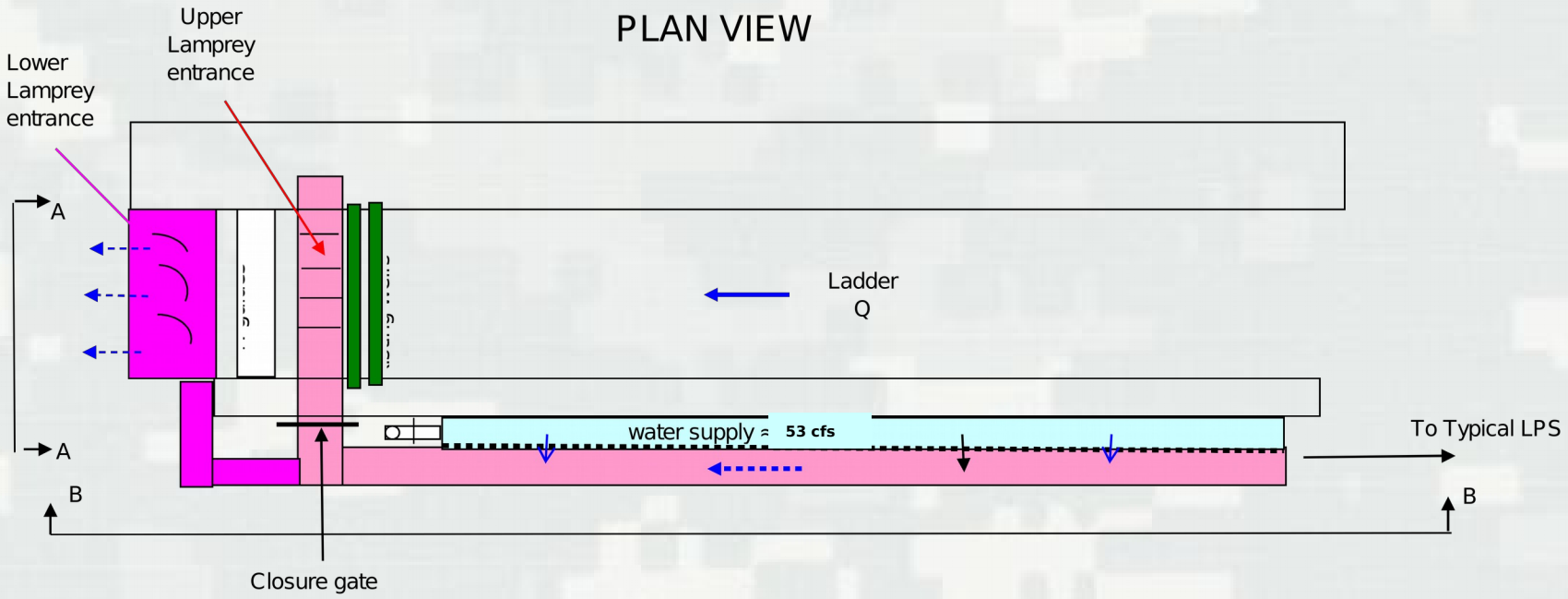






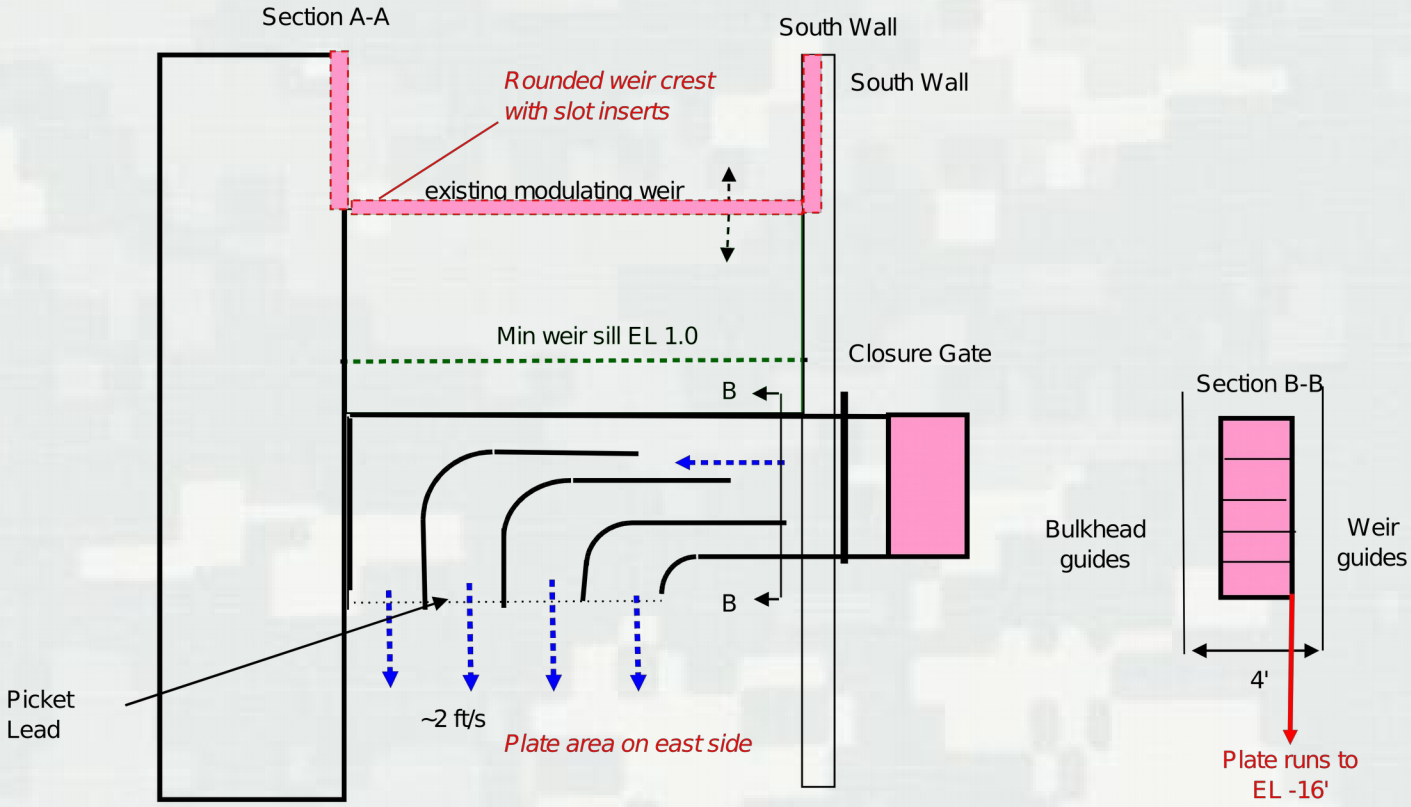
Isometric View of Surfaces in SLED Vacinity

Alternative 4 Details
Plan View

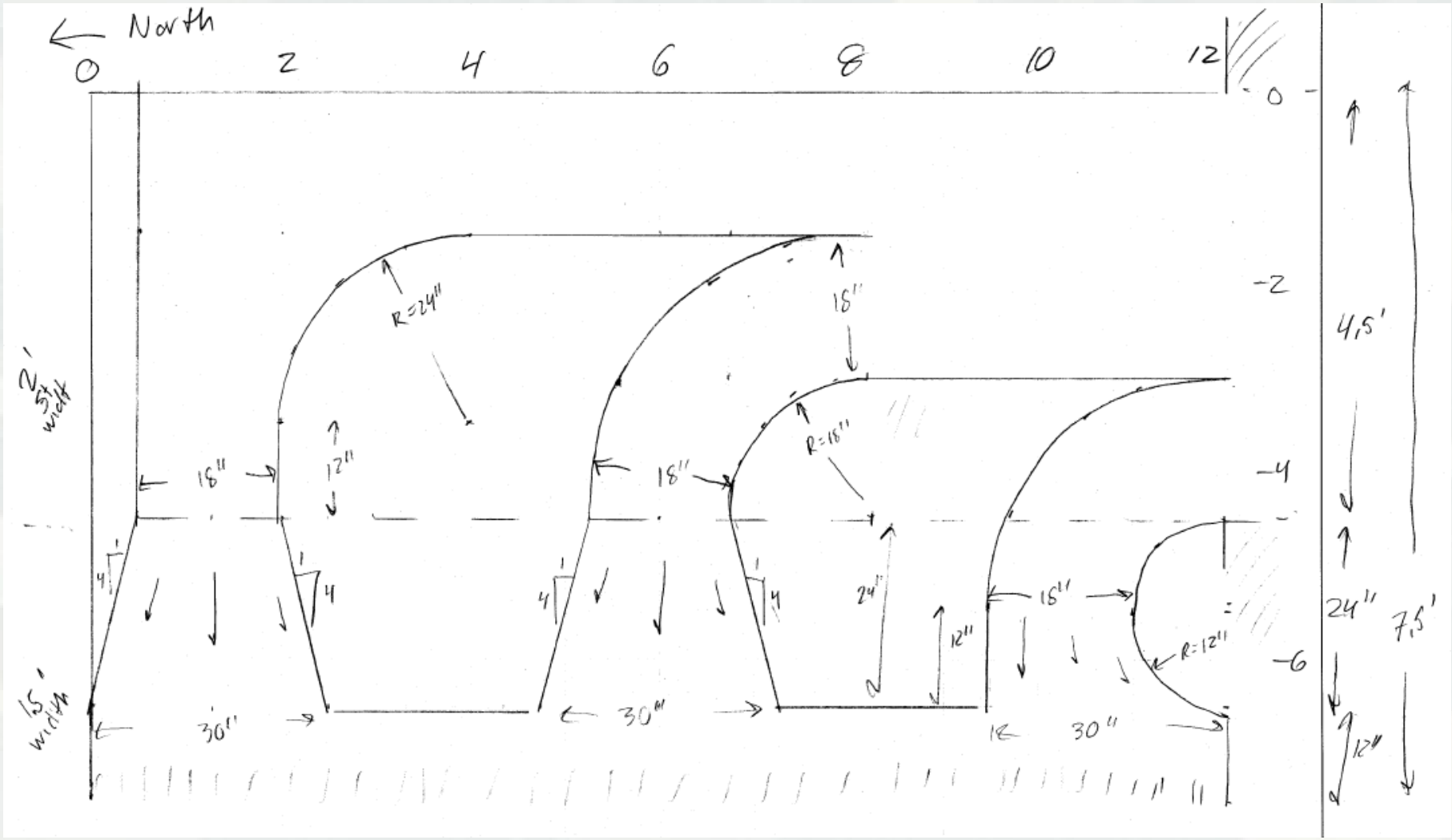


Alternative 4 Details

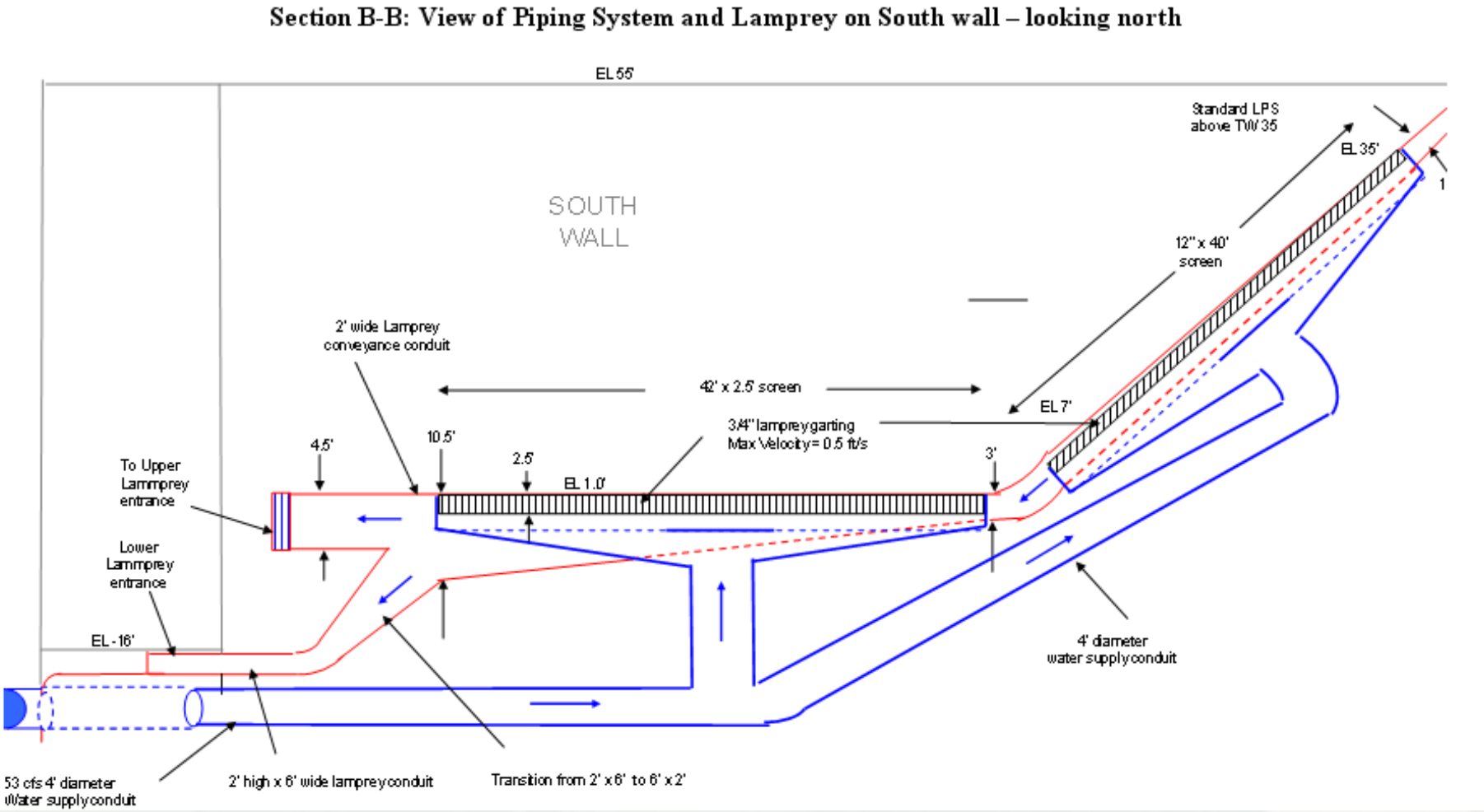
Section A-A Looking Upstream



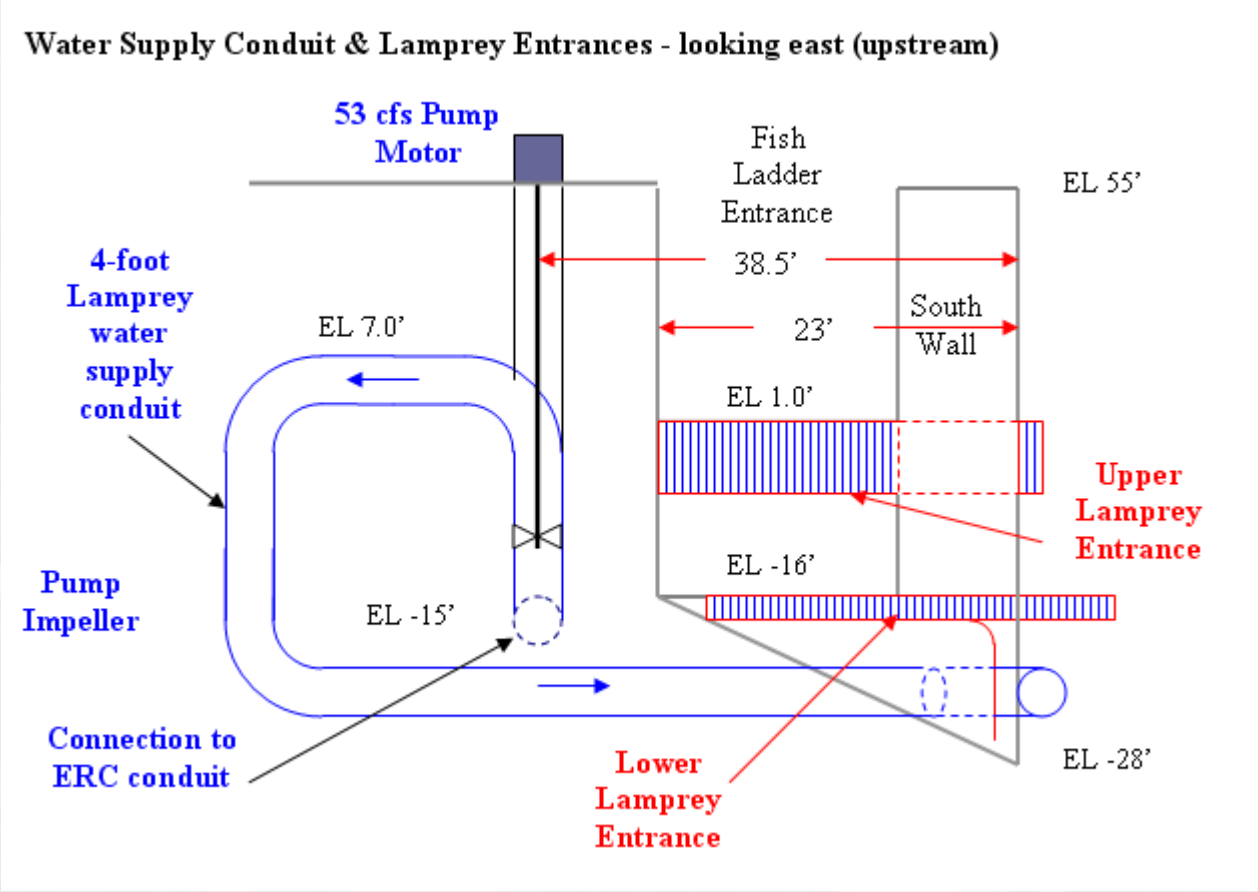
Upper Lamprey Entrance Collection Box



Alternative 4 Details


Section B-B: View of Piping System and Lamprey on South wall – looking north
EL 55'
SOUTH WALL
Standard LPS above TW 35
EL 35'
12" x 40' screen
2' wide Lamprey conveyance conduit
42' x 2.5' screen
EL 7'
3/4" lamprey garting Max Velocity = 0.5 ft/s
4.5'
10.5'
2.5'
EL 1.0'
3'
To Upper Lammprey entrance
Lower Lammprey entrance
EL -16'
4' diameter water supply conduit
53 cfs 4' diameter water supply conduit
2' high x 6' wide lamprey conduit
Transition from 2' x 6' to 6' x 2'

Alternative 4 Details



QUESTIONS?

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